

In re: Bastiaan Driehuys et al.  
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identifying the presence of at least one condition of blockage, restriction, abnormality, and substantially unobstructed free passage of the pulmonary circulation path.

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(Amended) A method according to Claim 1, wherein the controlled injection rate is less than about 2 cc/s.

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20. (Amended) A method according to Claim 1, further comprising:  
providing a container configured to hold the first injectable quantity of polarized gaseous  $^{129}\text{Xe}$  therein;  
preparing the container to hold the first injectable quantity of polarized gaseous  $^{129}\text{Xe}$  therein by introducing then expelling  $\text{CO}_2$  from the container thereby leaving residual traces of  $\text{CO}_2$  therein; and then  
introducing the first quantity of polarized gaseous  $^{129}\text{Xe}$  into the container prior to the step of injecting.

Please add the following new claims.

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89. (New) A method according to Claim 1, wherein the first quantity of injectable polarized gaseous  $^{129}\text{Xe}$  is formulated for *in vivo* human administration.

90. (New) A method according to Claim 1, wherein the first quantity of injectable polarized gaseous  $^{129}\text{Xe}$  is in a quantity less than about 5 cubic centimeters.

91. (New) A method according to Claim 1, further comprising evaluating the effectiveness of a therapeutic treatment based on the identifying step.

92. (New) A method according to Claim 1, wherein the preparing step is carried out by pressurizing the container with a quantity of  $\text{CO}_2$  and then evacuating the container to remove the  $\text{CO}_2$  therefrom.

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23/ 95. (New) A method according to Claim 92, further comprising repeating the pressurizing and evacuating steps a plurality of times to reduce the amount of oxygen in the container prior to the step of introducing the gaseous polarized  $^{129}\text{Xe}$  therein.

24/ 94. (New) A method according to Claim 13, further comprising obtaining an MRI ventilation image based on the inhaled polarized gas.

25/ 95. (New) A method according to Claim 94, wherein the generating step comprises generating a perfusion image based on the activity of the polarized  $^{129}\text{Xe}$  after the injecting step, and further comprising combining the ventilation image with the perfusion image to generate a combination image.

26/ 96. (New) A method according to Claim 95, wherein the inhaled polarized gas comprises gaseous  $^{129}\text{Xe}$  in a second quantity that is larger than the injected quantity.

27/ 97. (New) A method according to Claim 94, further comprising calculating the value of the ratio of the volume versus flow rate of the circulatory system of the subject.

30/ 98. (New) A method according to Claim 31, wherein the surfactant introduction is carried out so that the surfactant and  $^{129}\text{Xe}$  are injected separately into the subject.

33/ 99. (New) A method according to Claim 31, wherein the subject is a human subject, and wherein the surfactant is injected *in vivo* to a human subject after the polarized gaseous  $^{129}\text{Xe}$  is injected.

98/ 100. (New) A method according to Claim 8, wherein the controlled injection rate is between about 1-5 cc/s.

Sub 101. (New) A method according to Claim 1, wherein the obtaining step is commenced within about 5-25 seconds after the initiation of the injecting step.